Abstract:

Wide differences between the positional and photometric quality of astronomical data sets demands that visual examination is requisite to proper interpretation of cross-comparisons between data sets. Given the tedium involved in these comparisons, astronomy needs methods of Performing rapid cross-comparisons. The On-Line Science Information Services (OASIS), a Java toolkit recently released by the IPAC Infrared Science Archive (IRSA), provides this capability. OASIS is a collection of services, designed to be run independently of each other, that access and integrate multiple image and catalog archives. Its first release provides access to IRAS, 2MASS, MSX, FIRST, and NVSS images, and is interoperable with NED and CDS. We describe the ability of OASIS to perform efficient cross-identifications by reference to two research projects that have been enabled by it.

1. The relationship between X-ray and Far-IR emission in active galactic nuclei, which involves the identification and characterization of ~750 ROSAT sources in the ROSAT Faint Source Catalog, which are likely to be identified with faint IRAS sources. The identification is important because these wavelengths are much less affected by extinction than the visual, where up to 80% of the total energy density of AGN may be obscured. OASIS has enabled the discovery of over 100 new AGNs, and has enabled efficient construction of spectral energy distributions of ROSAT sources from the X-ray to the radio.

2. Building the Nearby Stars Database, a project at NASA Ames that will serve quality-controlled data for all stellar, substellar, and planetary objects within 25 parsecs of the Sun. OASIS is enabling the extraction of accurate photometry for the ~2600 members of the sample. To date, roughly 500 sets of 2MASS and IRAS photometry have been retrieved, verified, and placed in the NStars Database. Astrophysically interesting stars, such as unresolved multiple systems and stars with newly discovered infrared excesses, have already been identified using these data, and used as the basis for new observational programs.investigative observational programs have commenced.